

RULES

FOR THE CLASSIFICATION AND CONSTRUCTION OF SMALL SEA FISHING VESSELS

PART XI ELECTRICAL EQUIPMENT

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RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SMALL SEA FISHING VESSELS

Rules for the Classification and Construction of Small Sea Fishing Vessels of Russian Maritime Register of Shipping (RS, the Register) have been approved in accordance with the established approval procedure and come into force on 1 January 2023.

The present edition of the Rules is based on the 2022 edition taking into account the amendments and additions developed immediately before publication.

The Rules are published in the following parts:

Part I "Classification";

Part II "Hull";

Part III "Equipment, Arrangements and Outfit";

Part IV "Stability and Freeboard";

Part V "Subdivision";

Part VI "Fire Protection";

Part VII "Machinery Installations";

Part VIII "Systems and Piping";

Part IX "Machinery";

Part X "Boilers, Heat Exchangers and Pressure Vessels";

Part XI "Electrical Equipment";

Part XII "Refrigerating Plants";

Part XIII "Materials";

Part XIV "Welding";

Part XV "Automation";

Part XVI "Structure and Strength of Fiber-Reinforced Plastic Ships";

Part XVII "Radio Equipment";

Part XVIII "Navigational Equipment".

REVISION HISTORY

(purely editorial amendments are not included in the Revision History)

For this version, there are no amendments to be included in the Revision History.

1 GENERAL

1.1 APPLICATION

1.1.1 The requirements of this Part of the Rules for the Classification and Construction of Small Sea Fishing Vessels¹ apply to electrical installations and individual types of electrical equipment of small sea fishing vessels subject to the Register technical supervision in addition to the applicable requirements of Part XI "Electrical Equipment" of the Rules for the Classification and Construction of Sea-Going Ships².

¹ Hereinafter referred to as "these Rules".

² Hereinafter referred to as "the Rules for the Classification".

1.2 DEFINITIONS AND EXPLANATIONS

1.2.1 Definitions and explanations relating to the general terminology are given in 1.2, Part XI "Electrical Equipment" of the Rules for the Classification.

1.2.2 The following definitions are used in this Part.

Electrical installation of a small fishing vessel is an electrical installation of a fishing vessel 12 to 24 m in length with the power of main machinery up to 375 kW (refer to 1.1.1, Part I "Classification").

Essential services are services normal operation whereof ensures safe ship operation in compliance with its designation (fishing), safety of human life and safety of the fishing products; such services are those listed in [1.3.2](#).

1.3 SCOPE OF SUPERVISION

1.3.1 General provisions.

General provisions applicable to the classification procedure, supervision during ship's construction and manufacture of the equipment, and surveys are stated in Part I "Classification".

1.3.2 Supervision of ship's electrical equipment.

Electrical equipment of systems and arrangements listed in 1.3.2, Part XI "Electrical Equipment" of the Rules for the Classification is subject to supervision along with the following items:

- electrical equipment of fishing gear;
- electrical equipment of process machinery (fishing and catching products processing machinery);
- other machinery and arrangements not listed above, as required by the Register.

1.3.3 Supervision during manufacture of electrical equipment.

1.3.3.1 Electrical equipment listed in 1.3.3, Part XI "Electrical Equipment" of the Rules for the Classification is subject to supervision during manufacture, along with the following items:

- electrical equipment of fishing gear;
- electrical equipment of process machinery.

1.3.3.2 Scope of tests of electrical equipment after manufacture and the requirements for tests are given in the Rules for the Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships.

2 GENERAL REQUIREMENTS

2.1 Electrical equipment (installations and individual types of electrical equipment) is covered by the applicable requirements stated in the respective chapters of Section 2, as well as in Section 19, Part XI "Electrical Equipment" of the Rules for the Classification.

3 MAIN ELECTRICAL POWER SOURCE

3.1 COMPOSITION AND CAPACITY OF MAIN ELECTRICAL POWER SOURCE

3.1.1 When the electrical power is the only source for operation of the auxiliary machinery providing the propulsion, steering and safety of the ship, then the main power source of such ship shall have the capacity sufficient for power supply of all the electrical equipment under the conditions specified in [3.1.2–3.1.5](#). Such power source shall at least consist of the following:

- .1 two generators, one of which may be driven by the main engine (shaft generator); or
- .2 accumulator batteries.

3.1.2 Capacity of the main electrical power source shall be sufficient to provide power supply of the necessary electrical equipment under all operating conditions of the ship, including the most power-consuming mode. At that start of the most powerful electric motor with the greatest starting current shall be provided.

Capacity of each generator shall be sufficient to make sure that in case of failure of one generator, the other one will provide power supply of the required auxiliary machinery ensuring normal navigation (including the maintenance of normal habitable conditions for the people onboard), except the power supply required for fishing gear and catch processing.

3.1.3 The number and power output of generators forming the main electrical power source shall be determined with regard to the following operating conditions of the ship:

- .1 running conditions;
- .2 manoeuvring;
- .3 fishing (production) conditions;
- .4 fire, hole in the ship's hull or other conditions affecting the safety of navigation with the main electrical power source in operation.

3.1.4 Where accumulator batteries are the main electrical power source, their capacity shall be sufficient for power supply of all the required electrical equipment in the most power-consuming mode during 8 h without charging. Charging of accumulator batteries from the electrical power source installed onboard shall be provided.

When no accumulator battery charger is provided on board the ship, capacity of the batteries shall be sufficient for power supply of the required electrical equipment in the most power-consuming mode during all the time determined by the ship designation and endurance.

3.1.5 When the accumulator batteries, being the main power supply, are simultaneously used for start of the main engine, their capacity shall be sufficient to provide power supply of the required electrical equipment, as specified in [3.1.4](#), including provision of at least 6 starts of the main engine.

3.2 TRANSFORMERS

3.2.1 In ships, where lighting and other circuits of essential services are powered through transformers, only one transformer may be installed.

3.3 POWER SUPPLY FROM AN EXTERNAL SOURCE OF ELECTRICAL POWER

3.3.1 If provision is made for ship's mains to be supplied from an external source of electrical power, an external supply switchboard shall be installed on board the ship.

For ships with the electrical installation of low power (50 kW and below) it is allowed that cables for supply of the ship's mains from an external source of electrical power shall be connected directly to protection-switching device of the main switchboard.

4 DISTRIBUTION OF ELECTRICAL POWER

4.1 DISTRIBUTION SYSTEMS

4.1.1 It is not allowed to use direct and alternating current distribution systems of electrical power in shipboard installations with the ship's hull return for voltage, except the local earthed systems (for instance, starter systems).

4.1.2 Arrangement of distribution gear.

Distribution gear shall be located in closed spaces, where the concentration of flammable and toxic gases, water vapours, dust and acid evaporations is eliminated. Distribution devices (including main switchboard and automatic switchboard) may be located in the spaces on the navigating bridge or wheelhouse deck.

When the main and emergency switchboards are located on the wheelhouse deck, they shall be separated from each other with bulkheads having "A-60" class fire insulation.

5 EMERGENCY ELECTRICAL INSTALLATIONS

5.1 GENERAL

5.1.1 On the ship an autonomous emergency source of electrical power shall be provided. A diesel-generator or an accumulator battery may be used as an emergency source of power.

Separate emergency source of power is not required for ships, in which the main and emergency source of electrical power are accumulator batteries, on condition that at least one of the batteries installed satisfies the capacity and location requirements imposed upon the emergency source of electrical power ([refer to 5.2](#)).

5.1.2 When the emergency diesel-generator is used as the emergency source of power, it shall be provided with independent fuel system and other prime mover service systems. When the standby starting system is not provided, the available system shall be protected against full starting power loss by means of restriction (1–3) of number of automatic start efforts.

5.2 ARRANGEMENT OF EMERGENCY SOURCES OF ELECTRICAL POWER

5.2.1 The spaces of emergency sources of electrical power and emergency switchboard shall be located above the uppermost continuous deck and outside machinery spaces.

5.2.2 Accumulator batteries may be located in special ventilated cases or cabinets installed on deck or inside the ship's hull; however, they shall be located outside accommodation spaces, except the cases when the accumulator battery is located in a special tight container.

5.2.3 When an unattended accumulator battery is used as the emergency source of electrical power, which does not emit gases during operation and does not affect the surrounding equipment, then this battery and the emergency switchboard shall be located in one space.

5.3 POWER SUPPLY OF SERVICES FROM EMERGENCY SOURCE

5.3.1 The emergency source of electrical power shall supply the following services during 3 h:

- .1** emergency lighting for:
 - all corridors, stairways and exits from machinery and service spaces;
 - all control stations, as well as the main and emergency switchboards;
 - wheelhouse;
 - muster and embarkation stations for boarding life-saving appliances on deck and overboard;
 - stowage positions for emergency and fireman's outfit, life-saving appliances;
 - steering gear compartments;
 - positions at fire and emergency bilge pumps, and starting positions of their motors; on deck at the fishing gear;
- .2** navigation lanterns, lanterns of "Vessel not under command" signal and other lanterns required by Section 8, Part III "Equipment, Arrangements and Outfit";
- .3** internal communication means and general alarm signals;
- .4** sound signal means (whistles, etc.) and other alarms required in an emergency;
- .5** radio and navigational equipment in compliance with the requirements of the respective parts of these Rules.

5.3.2 The emergency source of power (accumulator battery) shall be automatically connected to busbars of the emergency switchboard upon the failure of the electrical supply from the main source.

5.3.3 On the main switchboard or in the wheelhouse an indicator shall be provided, which shall switch on in case of discharge of the accumulator battery being the emergency source of power.

6 REQUIREMENTS FOR ELECTRICAL EQUIPMENT OF REFRIGERATING PLANTS

6.1 Electrical equipment of refrigerating plants shall comply with Section 20, Part XI "Electrical Equipment" of the Rules for the Classification.

7 SPARE PARTS

7.1 Nomenclature and standards relating to spare parts are determined by the manufacturer.

Russian Maritime Register of Shipping

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Part XI
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FAI "Russian Maritime Register of Shipping"
8, Dvortsovaya Naberezhnaya,
191186, St. Petersburg,
Russian Federation
www.rs-class.org/en/